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STRATEGIC PETROLEUM
RESERVE

Improving the Cost-
Effectiveness of Filling the
Reserve

Statement of Frank Rusco, Acting Director
Natural Resources and Environment



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Highlights of [GAO-08-726T](#), a testimony before the Select Committee on Energy Independence and Global Warming, U.S. House of Representatives

Why GAO Did This Study

The Strategic Petroleum Reserve (SPR) was created in 1975 to help protect the U.S. economy from oil supply disruptions and currently holds about 700 million barrels of crude oil. The Energy Policy Act of 2005 directed the Department of Energy (DOE) to increase the SPR storage capacity from 727 million barrels to 1 billion barrels, which it plans to accomplish by 2018. Since 1999, oil for the SPR has generally been obtained through the royalty-in-kind program, whereby the government receives oil instead of cash for payment of royalties on leases of federal property. The Department of Interior's Minerals Management Service (MMS) collects the royalty oil and transfers it to DOE, which then trades it for oil suitable for the SPR.

As DOE begins to expand the SPR, past experiences can help inform future efforts to fill the reserve in the most cost-effective manner. In that context, GAO's testimony today will focus on: (1) factors GAO recommends DOE consider when filling the SPR, and (2) the cost-effectiveness of using oil received through the royalty-in-kind program to fill the SPR.

To address these issues, GAO relied on its 2006 report on the SPR, as well as its ongoing review of the royalty-in-kind program, where GAO interviewed officials at both DOE and MMS, and reviewed DOE's SPR policies and procedures. DOE provided comments on a draft of this testimony, which we incorporated where appropriate.

To view the full product, including the scope and methodology, click on [GAO-08-726T](#). For more information, contact Frank Rusco at (202) 512-3841 or ruscof@gao.gov.

April 2008

STRATEGIC PETROLEUM RESERVE

Improving the Cost-Effectiveness of Filling the Reserve

What GAO Found

To decrease the cost of filling the reserve and improve its efficiency, GAO recommended in previous work that DOE should include at least 10 percent heavy crude oils in the SPR. If DOE bought 100 million barrels of heavy crude oil during its expansion of the SPR it could save over \$1 billion in nominal terms, assuming a price differential of \$12 between the price of light crude oil and the lower price of heavy crude oil, the average differential over the last five years. Having heavy crude oil in the SPR would also make the SPR more compatible with many U.S. refineries, helping these refineries run more efficiently in the event that a supply disruption triggers use of the SPR. DOE indicated that, due to the planned SPR expansion, determinations of the amount of heavy oil to include in the SPR should wait until it prepares a new study of U.S. Gulf Coast refining requirements. In addition, we recommended that DOE consider acquiring a steady dollar value—rather than a steady volume—of oil over time when filling the SPR. This “dollar-cost-averaging” approach would allow DOE to acquire more oil when prices are low and less when prices are high. GAO found that if DOE had used this purchasing approach between October 2001 through August 2005, it could have saved approximately \$590 million, or over 10 percent, in fill costs. GAO’s simulations indicate that DOE could save money using this approach for future SPR fills, regardless of whether oil prices are trending up or down as long as there is price volatility. GAO also recommends that DOE consider giving companies participating in the royalty-in-kind program additional flexibility to defer oil deliveries in exchange for providing additional barrels of oil. DOE has granted limited deferrals in the past, and expanding their use could further decrease SPR fill costs. While DOE indicated that its November 2006 rule on SPR acquisition procedures addressed our recommendations, this rule does not specifically address how to implement a dollar-cost-averaging strategy.

Purchasing oil to fill the SPR—as DOE did until 1994—is likely to be more cost-effective than exchanging oil from the royalty-in-kind program for other oil to fill the SPR. The latter method adds administrative complexity to the task of filling the SPR, increasing the potential for waste and inefficiency. A January 2008 DOE Inspector General report found that DOE is unable to ensure that it receives all of the royalty oil that MMS provides. In addition, we found that DOE’s method for evaluating bids has been more robust for cash purchases than royalty-in-kind exchanges, increasing the likelihood that cash purchases are more cost-effective. For example, in April 2007, DOE solicited two different types of bids—one to purchase oil for the SPR in cash and one to exchange royalty oil for other oil to fill the SPR. DOE rejected offers to purchase oil when the spot price was about \$69 per barrel, yet in the same month, DOE exchanged royalty-in-kind oil for other oil to put in the SPR at about the same price. Because the government would have otherwise sold this royalty-in-kind oil, DOE committed the government to pay, through foregone revenues to the U.S. Treasury, roughly the same price per barrel that DOE concluded was too high to purchase directly.

Mr. Chairman and Members of the Committee:

We are pleased to be here today to participate in the Committee's hearing on the Strategic Petroleum Reserve (SPR). Congress authorized the SPR in 1975 to protect the nation from oil supply disruptions following the Arab oil embargo of 1973 and 1974 that led to sharp increases in oil prices. The federal government owns the SPR, and the Department of Energy (DOE) operates it. The SPR currently has the capacity to store up to 727 million barrels of crude oil in salt caverns in Texas and Louisiana. As of April 21, 2008, current inventory of the SPR stood at 701.3 million barrels of oil, which is roughly equivalent to 58 days of net oil imports. DOE made direct purchases of crude oil until 1994, when purchases were suspended due to the federal budget deficit, and in fiscal years 1996 and 1997 approximately 28 million barrels of oil were sold to reduce the deficit. Since DOE resumed filling the SPR in 1999, it has obtained oil from the Department of the Interior's Minerals Management Service (MMS) "royalty-in-kind" program. Through this program, the MMS receives oil instead of cash for payments of royalties from companies that lease federal property for oil and gas development. MMS contracts for some of this royalty oil to be delivered to designated oil terminal locations or "market centers" where DOE takes possession. Because the royalty oil often does not meet SPR quality specifications, and because the market centers can be distant from SPR storage sites, DOE generally awards contracts to exchange royalty oil at the market center for SPR-quality oil delivered to SPR facilities. Obtaining oil for the SPR through the royalty-in-kind program avoids the need for Congress to make outlays to finance oil purchases, but the foregone revenues associated with using royalty-in-kind oil to trade for SPR oil imply an equivalent loss of revenue because MMS would otherwise sell the oil and deposit the revenues with the U.S. Treasury. Interior estimates that the forgone revenue attributable to using the royalty-in-kind program to fill the SPR were \$4.6 billion from fiscal year 2000 through fiscal year 2007.

The Energy Policy Act of 2005 directed DOE to increase the SPR storage capacity to 1 billion barrels and to fill it “as expeditiously as practicable without incurring excessive cost or appreciably affecting the price of petroleum products to consumers.”¹ It required DOE to select sites to expand the SPR’s storage capacity within 1 year of enactment, by August 2006. On February 14, 2007, Secretary of Energy William Bodman designated three sites for the expansion, including a 160 million barrel facility in Richton, Mississippi, an 80 million barrel expansion of a facility in Big Hill, Texas, and a 33 million barrel expansion of a facility in Bayou Choctaw, Louisiana. In its June 2007 SPR plan, DOE anticipated these expansions would begin in fiscal year 2008 and be complete in 2018.^{2,3} DOE also indicated that it would prefer to continue using the royalty-in-kind program to fill the additional storage capacity. DOE estimates the capital cost for the SPR expansion at approximately \$3.67 billion, and estimates the cost of operating and maintaining the expanded portion of the SPR at \$35 to \$40 million per year.

As DOE begins to expand the SPR, past experiences may help inform future efforts to fill the SPR in the most cost-effective manner. In that context, our testimony today will focus on: (1) factors we recommend DOE consider when filling the SPR, and (2) the cost-effectiveness of using oil received through the royalty-in-kind program to fill the SPR.

To address these issues, we are summarizing work from our August 2006 report on the SPR and our ongoing review of the royalty-in-kind program.⁴ For our

¹Pub. L. No. 109-58 (2005). The Energy Policy and Conservation Act, Pub. L. No. 94-163 (1975), created the SPR and authorized storage of up to one billion barrels of petroleum products.

²DOE, Office of Petroleum Reserves, *Strategic Petroleum Reserve Plan: Expansion to One Billion Barrels* (Washington, D.C.: June 2007).

³In his State of the Union speech on January 23, 2007, President Bush proposed expanding the SPR further to 1.5 billion barrels. Secretary of Energy William Bodman indicated that DOE’s goal was to have this expansion completed by 2027.

⁴GAO, *Strategic Petroleum Reserve: Available Oil Can Provide Significant Benefits, but Many Factors Should Influence Future Decisions about Fill, Use, and Expansion*, GAO-06-872 (Washington, D.C.: Aug. 24, 2006).

August 2006 report, we contracted with the National Academy of Sciences to convene a group of 13 industry, academic, governmental, and nongovernmental experts to collect opinions on the impacts of past SPR fill and use and on recommendations for the future. We also reviewed records and reports from DOE and the International Energy Agency. In addition, for our ongoing review of the royalty-in-kind program for this committee and others, we identified and reviewed applicable laws and documentation on DOE policies and procedures for evaluating SPR purchase and exchange bids, and interviewed officials at both Interior and DOE. We have also drawn upon previous GAO reports on the royalty-in-kind program.⁵ We conducted our work on this testimony from January to April 2008 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

In summary:

- To fill the SPR in a more cost-effective manner, we recommended in previous work that DOE include in the SPR at least 10 percent heavy crude oils, which are more compatible with many U.S. refiners and generally cheaper to acquire than the lighter oils that comprise the SPR's volume. DOE indicated that, due to the planned SPR expansion, such determinations should wait until it prepares a new study of U.S. Gulf Coast heavy sour crude refining requirements. In addition, we recommended that

⁵GAO, *Royalties Collection: Ongoing Problems with Interior's Efforts to Ensure a Fair Return for Taxpayers Require Attention*, GAO-07-682T (Washington, D.C.: Mar. 28, 2007).

GAO, *Mineral Revenues: Cost and Revenue Information Needed to Compare Different Approaches for Collecting Federal Oil and Gas Royalties*, GAO-04-448 (Washington, D.C.: Apr. 16, 2004).

GAO, *Mineral Revenues: A More Systematic Evaluation of the Royalty-in-Kind Pilots is Needed*, GAO-03-296 (Washington, D.C.: Jan. 9, 2003).

DOE consider acquiring a steady dollar value of oil over time and allowing oil companies more flexibility to defer delivery of royalty-in-kind exchanges to the SPR when prices are likely to decline in return for additional deliveries in the future. In updating us on the status of this recommendation, DOE indicated that its November 8, 2006, rule on SPR acquisition procedures addressed our recommendations; however, this rule does not specifically address both how to implement a dollar-cost-averaging strategy and how to provide industry with more deferral flexibility. In subsequent comment, DOE noted that the November 8, 2006, acquisition procedures do not address dollar-cost-averaging, but they do address flexibility of purchasing and scheduling in volatile markets.

- Filling the SPR with oil purchased in cash is likely to be more cost-effective than filling the SPR through the royalty-in-kind program for several reasons. For example, the royalty-in-kind program adds a layer of administrative complexity to the task of filling the SPR, increasing the potential for waste or inefficiency. Moreover, DOE has evaluated the cost of cash purchases more thoroughly than exchanges, increasing the likelihood that cash purchases are more cost-effective. For example, in May 2007, DOE rejected cash purchases for the SPR, concluding that the current price of about \$69 per barrel was unusually high. However, in the same month, DOE entered into contracts to exchange royalty oil, effectively committing the government to pay—through foregone revenues to the U.S. Treasury—about the same price for oil that it concluded was too high to purchase directly. In November, DOE entered into another exchange contract when oil was about \$96 per barrel.

DOE Could Improve the Cost-Effectiveness of Filling the SPR

To decrease the cost of filling the SPR and improve its efficiency, we have recommended in our previous work that DOE: (1) include at least 10 percent

heavy crude oil in the SPR, (2) consider acquiring a steady dollar value of oil, and (3) consider allowing oil companies additional flexibility to defer deliveries in exchange for delivering additional barrels of oil at a later date. The current composition of the SPR is entirely of medium to light grades of oil.^{6, 7} Including heavier oil in the SPR could significantly reduce fill costs because heavier oil is generally less expensive than lighter grades. We recommended in our August 2006 report that DOE, at a minimum, implement its own recommendation made in a 2005 study to have at least 10 percent heavy oil in the SPR.⁸ In addition, we found that DOE may have underestimated how much heavy oil should be in the SPR to minimize oil acquisition costs. Therefore, we further recommended that DOE examine the maximum amount of heavy oil that should be held in the SPR. To illustrate the potential magnitude of savings from including heavy crude oil in the SPR, we have done some simple calculations. If DOE included 10 percent heavy oil in the SPR as it expands to 1 billion barrels, that would require DOE to add 100 million barrels of heavy oil, or about one-third of the total new fill. From 2003 through 2007, Maya—a common heavy crude oil—has traded for about \$12 less per barrel on average than West Texas Intermediate—a common light crude oil. If this price difference were to persist over the duration of the new fill period, DOE would save about \$1.2 billion in nominal terms by filling the SPR with 100 million barrels of heavy oil.⁹ The savings could be even larger if DOE included more than 10 percent heavier oils in the SPR. Alternatively, DOE could add heavy oil to the SPR by exchanging the light oil in one or more of the caverns for heavier oil. DOE has the legal authority to exchange one type of oil for another and has

⁶For information on the composition of the SPR, see: DOE, Office of the Assistant Secretary for Fossil Energy, *Strategic Petroleum Reserve: Annual Report for Calendar Year 2006*.

⁷The weight of oil is measured by its gravity index. According to DOE's EIA, light oil is greater than 38 degrees gravity, while intermediate oils, such as those in the SPR, are 22 to 38 degrees gravity.

⁸See DOE, Office of the Deputy Assistant Secretary for Petroleum Reserves, *Strategic Petroleum Reserve Crude Compatibility Study* (December 2005).

⁹This calculation is intended to illustrate the magnitude of potential savings, and is not meant to be a projection of actual savings. The actual price difference between light and heavy oil over the course of the new fill could be smaller or larger than over the past 5 years, which would either reduce or increase the savings, respectively.

done so before. For example, in 1998, DOE exchanged 11 million barrels of heavy crude oil stored in the Bryan Mound site for 8.5 million barrels of other higher value light crude oil.

Including heavier oil would have the additional benefit of making the composition of SPR oil more compatible with U.S. refineries. In recent years, many refiners in the United States have upgraded their facilities so they can process heavy oil. Our analysis of DOE's Energy Information Administration (EIA) data shows that, of the approximately 5.6 billion barrels of oil that U.S. refiners accepted in 2006, approximately 40 percent was heavier than that stored in the SPR.¹⁰ Refineries that process heavy oil cannot operate at normal capacity if they run lighter oils. For instance, DOE's December 2005 found that the types of oil currently stored in the SPR would not be fully compatible with 36 of the 74 refineries considered vulnerable to supply disruptions. DOE estimated that if these 36 refineries had to use SPR oil, U.S. refining throughput would decrease by 735,000 barrels per day, or 5 percent, substantially reducing the effectiveness of the SPR during an oil disruption, especially if the disruption involved heavy oil. To improve the compatibility of SPR oil with refineries in the United States, the DOE study concluded that the SPR should contain about 10 percent heavy oil. However, our August 2006 report found that DOE may have underestimated how much heavy oil should be in the SPR to maximize compatibility with refiners. We also found DOE may have underestimated the potential impact of heavy oil disruptions on gasoline production. Several refiners who process heavy oil told us that they would be unable to maintain normal levels of gasoline production if forced to rely on SPR oil as currently constituted. For example, an official from one refinery stated that if it exclusively used SPR oil in its heavy crude unit, it would produce 11 percent less gasoline and 35 percent less diesel. Representatives from other refineries

¹⁰According to DOE's EIA, heavy oil has a gravity index of 22 degrees or below. According to EIA 2006 data, about 10 percent of the oil accepted by U.S. refiners has this gravity index and are considered heavy oils. An additional 30 percent of oil accepted by U.S. refiners was 22 to 30 degrees gravity, however, according to DOE, all oils stored in the SPR range from approximately 30 to 37 degrees gravity.

told us they might need to shut down portions of their facilities if they could not obtain heavy oil. For these reasons, we recommended that DOE conduct a new review of the optimal oil mix in the SPR and determine the maximum volume of heavy oil that could be effectively put in the reserve.

In addition, we recommended that DOE consider filling the SPR by acquiring a steady dollar value of oil over time, rather than a steady volume of oil over time as has occurred in recent years. This “dollar-cost-averaging” approach would allow DOE to take advantage of fluctuations in oil prices and ensure that more oil would be acquired when prices are low and less when prices are high. In our 2006 report, we found that if DOE had used this approach from October 2001 through August 2005, it could have saved approximately \$590 million in fill costs. We also ran simulations to estimate potential future cost savings from using a dollar-cost-averaging approach over 5 years and found that DOE could save money regardless of the price of oil as long as there is price volatility, and that the savings would be generally greater if oil prices were more volatile.

We also recommended that DOE consider allowing oil companies participating in the royalty-in-kind program more flexibility to defer their deliveries to the SPR at times when filling would significantly tighten the market or when prices are expected to decline.¹¹ In return for these deferrals, companies would provide additional barrels of oil when they resumed deliveries. DOE has already approved some delivery deferrals at companies’ requests, such as during the winter 2002-2003 oil workers’ strike in Venezuela. From October 2001 through August 2005, DOE received an additional 4.6 million barrels of oil for the SPR valued at approximately \$110 million as payment for these delivery deferrals. However, DOE has denied some deferral requests and experts have noted that there is room to expand the use of deferrals. Experts noted DOE would need to exercise its authority to deny deferrals at times when it is in the national interest.

¹¹For example, this situation could occur if futures prices are lower than current prices. Futures prices of oil reflect the cost of delivery at a specified place, price, and time in the future.

Nonetheless, given that the SPR currently holds roughly 58 days of net imports, we believe there is sufficient inventory for some flexibility in allowing deferrals.

In updating us on the status of recommendations we made to DOE in our August 2006 report, DOE indicated that its November 8, 2006, rule on SPR acquisition procedures addressed our recommendations on dollar-cost-averaging and deferrals. However, the new acquisition rule does not specifically address our recommendations to study both how to implement a dollar-cost-averaging strategy and how to provide industry with more deferral flexibility. Unless DOE addresses and adopts these recommendations, it will not be filling the reserve in the most cost-effective manner. As to our recommendation on the optimal mix of oil in the SPR, DOE indicated that, due to the planned SPR expansion, such determinations should wait until it prepares a new study of U.S. Gulf Coast heavy sour crude refining requirements. We believe the SPR expansion offers DOE an ideal opportunity to change the SPR's oil mix to include heavier oils that are less costly to acquire and better match U.S. refining capacity. We look forward to DOE completing its new study of U.S. Gulf Coast heavy crude refining requirements and believe such a study will find that DOE should include more than 10 percent heavier oils in the SPR.

Purchasing Oil to Fill the SPR May Be More Cost-Effective Than Current Royalty-in-Kind Program

There are several reasons that purchasing oil—as DOE did until 1994—may be more cost-effective than filling the SPR using the current royalty-in-kind program. For instance, there may be fewer bidders for the royalty oil under the current exchange system than a direct cash purchase system, which in turn may limit competition and the exchange deals that DOE can negotiate. In the exchange process, a single company must be able to and interested in both accepting oil at the designated market centers and delivering other oil with specific characteristics to the SPR. This may limit the number of companies interested in

bidding on exchange contracts. In contrast, if DOE purchased oil, many additional companies may be interested in selling their oil, increasing competition and lowering prices.¹² In 2007, the then Deputy Assistant Secretary for Petroleum Reserves, who directed activities of the SPR, told us that he agrees with this reasoning. The inherent limits of exchanging versus direct purchases are compounded by the fact that DOE and Interior have not systematically analyzed where to send royalty oil in a way that maximizes the value of the exchanges. The value of exchanges is a function of both the costs to deliver oil to market centers and the deals that DOE can negotiate at particular market centers. The informal process that Interior and DOE currently use to identify market centers does not systematically analyze the tradeoffs between these two factors to identify market centers that optimize net value to the government.

In addition, royalty-in-kind exchanges add a layer of administrative complexity to the task of filling the SPR, increasing the potential for waste or inefficiency. In a January 2008 report, the DOE Inspector General concluded that DOE does not have an effective control system over receipts of royalty oil from Interior at the market centers.¹³ Specifically, the Inspector General found that DOE did not have adequate controls to ensure that the volumes of oil that contractors reported to have received from Interior at the market centers matched scheduled deliveries. As a result, DOE did not have assurance that it received all of the oil that Interior shipped, raising concerns that DOE may not have received its full entitled deliveries to the SPR. If DOE purchased all of its oil, it would no longer need to exchange oil at designated market centers and would not need to coordinate with Interior. Moreover, rather than diverting a fraction of the oil collected through the royalty-in-kind program to fill the SPR, Interior could sell that fraction in competitive sales, as it currently does for the other oil it receives through the

¹²We note that including heavier oils in addition to lighter oils would also increase the number of potential suppliers of oil for the SPR.

¹³DOE Office of Inspector General, *Audit Report: Department of Energy's Receipt of Royalty Oil*, DOE/IG-0786 (Washington, D.C.: Jan. 2008).

royalty-in-kind program. A senior Interior official said that selling the royalty oil would be simpler for Interior to administer than the current exchanges.

Further, DOE's method for evaluating bids is more robust for cash purchases than royalty-in-kind exchanges, increasing the likelihood that cash purchases are more cost-effective. In November 2006, DOE issued a final rule that describes how DOE will evaluate offers when it is purchasing oil and when it is exchanging royalty oil for other oil for the SPR.¹⁴ This rule provides DOE with considerable flexibility in the degree of analysis it can conduct when evaluating offers, and, in practice, DOE's method for evaluating bids for cash purchases has been more robust than it has for exchanges. For example, in April 2007, DOE solicited two different types of bids—one to purchase oil for the SPR in cash and one to exchange royalty oil for other oil to fill the SPR.¹⁵ In deciding whether to purchase oil, DOE evaluated the bids it received in the context of overall market trends. It concluded that the offers it received from sellers were priced too high, in part because the price of oil was generally high and because the prices of the specific type of oil DOE sought to purchase were unusually high relative to other oil types. As a result, DOE rejected offers to purchase oil when the spot price for Light Louisiana Sweet (LLS)—a commonly used benchmark for Gulf Coast oil—was about \$69 per barrel and decided to delay purchasing any oil until at least the end of the summer driving season.¹⁶ In contrast, DOE's method for evaluating bids for exchanging royalty oil focused on whether the oil DOE would receive would be at least the same value as the oil it would exchange. It did not include an analysis of whether overall market conditions indicated that it would be more profitable for the federal government to stop or delay exchanges and have Interior sell the royalty oil for cash instead. In this case, in the same month, DOE entered into royalty oil exchange contracts when the spot price of LLS was about \$67 a barrel,

¹⁴10 C.F.R Part 626.

¹⁵DOE's solicitations to purchase oil were part of a plan to replace 11 million barrels of SPR oil that DOE sold in the fall of 2005 after Hurricane Katrina disrupted refinery supplies.

¹⁶The spot price reflects the price for immediate settlement of oil purchases.

effectively committing the government to pay—through foregone revenues to the U.S. Treasury—roughly the same price for oil that DOE concluded was too high to purchase. Moreover, in November, it awarded additional exchange contracts when the spot price of LLS had reached \$96 a barrel.¹⁷

It should also be noted that the current exchange method is less transparent than direct purchases because the primarily cash-based federal budget does not account for noncash transactions. Interior estimates that the royalty-in-kind program cost the federal government in total foregone revenue \$4.6 billion from fiscal year 2000 through fiscal year 2007. This foregone revenue was not reflected in the federal budget since no federal cash flows were involved. Congressional budget decisionmakers therefore have not had the opportunity to consider whether the value of the transferred oil could be reallocated to other competing resource needs.

Importantly, the royalty-in-kind effort to fill the SPR creates, essentially, a “blind spot” where neither DOE nor Interior, the two agencies responsible for running the joint program, systematically examines whether exchanges of millions of barrels of royalty oil have been a cost-effective approach to filling the reserve. DOE does conduct a prospective analysis to estimate whether the value of the oil it will receive in the exchanges will be at least as valuable as the royalty oil it will exchange. However, DOE enters into exchange agreements that can last 6 months, and DOE’s initial estimates of the values of the different oil types may not hold over the duration of the contracts. DOE has not analyzed any of the completed exchanges to determine whether those exchanges performed as well

¹⁷By itself, the spot price does not determine how many barrels of oil the government will receive through royalty exchanges. Rather, this is determined by the relative value—the price of the grade of oil that DOE has to exchange (the oil it receives from Interior) versus the price of the grade of oil that it wishes to exchange for. This means that the government could receive the same number of barrels of SPR oil through its exchanges when spots prices are low or high. However, from a broader federal perspective, it would be more cost-effective if the federal government deferred royalty exchanges when oil prices were high and sold the royalty oil for cash. It could then purchase oil when oil prices were lower, acquiring more of the desired grade of oil for the same amount of money.

as expected. Similarly, when evaluating the performance of the royalty-in-kind program overall, Interior does not analyze whether the royalty oil transfers to DOE are a cost-effective means to fill the reserve.¹⁸ The 60.7 million barrels of oil that Interior transferred to DOE from fiscal year 2004 to 2005 accounted for 58 percent of all the royalty-in-kind oil that Interior collected during that time. While Interior reports to Congress each year on the financial performance of its royalty-in-kind program, these reports have not included a measure of the cost-effectiveness of using royalty oil to fill the SPR.

Conclusions

Because the SPR has reached sufficient size to address near-term supply disruptions, decisions about future fill practices can be made in a more flexible, cost-effective manner without unduly hurting our ability to respond to such disruptions. With oil prices recently exceeding \$117 a barrel, there should be greater interest in finding ways to reduce fill costs. If it is to reach its goal of filling the expanded SPR by 2018, DOE will have to, in some combination, purchase or receive through royalty-in-kind transfers roughly 300 million barrels of oil. Our work shows that substantial cost savings could be achieved through increased purchasing of heavy oil, a dollar-cost-averaging purchasing strategy, more flexibility in the timing of oil purchases and deliveries, and greater attention paid to the opportunity costs of filling the SPR with royalty oil. Based on our past estimates of the cost savings potential of dollar cost averaging and the significantly lower cost of heavier oils, DOE could save well over 10 percent of the costs of filling the SPR to the currently authorized level—an amount that is likely well in excess of \$1 billion. During this era of dire national long-term fiscal challenges, it is all the more important that DOE make fill decisions in a cost-effective manner.

¹⁸Interior does, however, have procedures in place to ensure that it pays a reasonable rate to transport oil from the offshore federal leases, where the oil is produced, to the market centers where DOE takes possession of the oil.

Mr. Chairman, this concludes my prepared statement. I would be pleased to respond to any questions that you or other members of the Committee may have at this time.

GAO Contact and Staff Acknowledgements

For further information about this testimony, please contact me, Frank Rusco, at 202-512-3841 or ruscof@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Contributors to this testimony include Ben Bolitzer, Chase Huntley, Heather Hill, Michael Kendix, Jon Ludwigson, Tim Minelli, Michelle Munn, Alison O'Neill, G. Greg Peterson, and Barbara Timmerman.

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